

Attorney Docket No. 890-004.002
Serial No. 09/478,677

Claim amendments:

Claims 1-17 (cancelled)

18. (currently amended) A foam cutting machine with a vertical blade strip (90') and a horizontal blade strip (90), comprising:

an apparatus body (10) having a working surface (11) linearly and reciprocally movable back and forth for moving a work piece place thereon; and

a frame (20) bridging over the apparatus body (10), the frame having two substantially upright columns on first and second sides (101, 102) of the frame (20) and two transverse beams on third and fourth sides (103, 104) of the frame (20), the two transverse beams connected between the two upright columns to define a substantially rectangular winding space for accommodating a vertical cutting device (17) and a horizontal cutting device (16), wherein

the horizontal cutting device (16) comprising:

a guide rail (21) disposed adjacent to the first side (101) of the frame (20),

a first linear slide bar (22a) disposed between the first side (101) of the frame (20) and ~~the guide rail (21)~~ the first linear slide bar substantially parallel to the guide rail (21),

a second linear slide bar (22b) disposed adjacent to the second side (102) of the frame (20),

a third linear slide bar (22c) disposed between the second side (102) of the frame (20) and ~~the second linear slide bar (22b)~~ the third linear slide bar (22c) spaced from and substantially parallel to the second linear slide bar (22b),

a first blade turning unit (32a) movably engaged with the guide rail (21), the first blade turning unit (32a) having a first blade seat (33a) mounting a first blade holder (51a) the first blade holder (51a) holding the horizontal blade strip (90), defining one end of a working section (X) of the horizontal blade strip (90), wherein the first blade turning unit (32a) is capable of turning the working section (X) of the horizontal blade strip at a deflection angle when cutting an irregular or curved shape;

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a second blade turning unit (32b) movably engaged with the second linear slide bar (22b), the second blade turning unit (32b) having a second blade seat (33b) mounting a second blade holder (51b) the second blade holder (51b) holding the horizontal blade strip (90), defining the other end of the working section (X) of the horizontal blade strip (90), wherein the second blade turning unit is capable of turning the working section (X) of the horizontal blade strip along with the first blade turning unit (32a);

a wheel set (40) including a driving wheel (41) disposed near a corner between the second side (102) and the fourth side (104) of the frame (20), a first pulley (43) movably engaged with the first linear slide bar (22a), a second pulley (47) spaced from the second blade turning unit (32b) and movably engaged with the third linear slide bar (22c), and two guide wheels (44, 45) separately disposed adjacent to first and second side (101, 102) near the third side (103) of the frame (20), wherein the wheel set (40) is used for winding the horizontal blade strip (90) in a closed loop with a fixed length and the wheel set further includes a guide wheel (46) disposed near the driving wheel (41) for keeping the loop in tension, and wherein the first pulley (43) is connected to a first blade turning unit (32a) for moving the first blade turning unit (32a) along the guide rail (21) when the first pulley (43) is moved along the first linear slide bar (22a); and

a transmission mechanism (23, 24) operatively connected to the first and second pulleys (43, 47) for simultaneously moving the first and second pulleys (43, 47), respectively, along the first and third linear slide bars (22a, 22c) so as to move the working section (X) up and down while maintaining the working section (X) substantially parallel to the working surface (11); and

the vertical cutting device (17) comprising:

a guide rail (21') disposed adjacent to the fourth side (104) of the frame (20),

a first linear slide bar (22'a) disposed between the fourth side (104) of the frame (20 and the ~~guide rail (21')~~ first linear slide bar (21') substantially parallel to the guide rail (21'),

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a second linear slide bar (22'b) disposed adjacent to the third side (103) of the frame (20),

a third linear slide bar (22'c) disposed between the third side (103) of the frame (20) and ~~the second linear slide bar (22'b)~~ third linear slide bar spaced from and substantially parallel to the second linear slide bar (22'b),

a first blade turning unit (32'a) movably engaged with the guide rail (21'), the first blade turning unit (32'a) having a first blade seat (33'a) mounting a first further blade holder (51'a) the first further blade holder (51'a) holding the vertical blade strip (90'), defining one end of a working section (Y) of the vertical blade strip (90'), wherein the first blade turning unit (32'a) is capable of turning the working section (Y) of the vertical blade strip (90') at a deflection angle when cutting an irregular or curved shape;

a second blade turning unit (32'b) movably engaged with the second linear slide bar (22'b), the second blade turning unit (32'b) having a second blade seat (33'b) mounting a second further blade holder (51'b) the second further blade holder (51'b) holding the vertical blade strip (90'), defining the other end of the working section (Y) of the vertical blade strip (90'), wherein the second blade turning unit (32'b) is capable of turning the working section (Y) of the vertical blade strip (90') along with the first blade turning unit (32'a);

a wheel set (40') including a driving wheel (41') disposed near a corner between the third side (103) and the first side (101) of the frame (20), a first pulley (43') movably engaged with the first linear slide bar (22'a), a second pulley (47') spaced from the second blade turning unit (32'b) and movably engaged with the third linear slide bar (22'c), two guide wheels (44', 45') separately disposed adjacent to fourth and third side (104, 103) near the second side (102) of the frame (20), wherein the wheel set (40') is used for winding the horizontal blade strip (90') in a closed loop with a fixed length and the wheel set further includes a guide wheel (46') disposed near the driving wheel (41') for keeping the loop in tension, and wherein the first pulley (43') is connected to a first

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blade turning unit (32'a) for moving the first blade turning unit (32'a) along the guide rail (21') when the first pulley (43') is moved along the first linear slide bar (22'a);

a transmission mechanism (23', 24') operatively connected to the first and second pulleys (43', 47') for simultaneously moving the first and second pulleys (43', 47'), respectively, along the first and third linear slide bars (22'a, 22'c) so as to move the working section (Y) left and right while maintaining the working section (Y) substantially perpendicular to the working surface (11).

19. (previously presented) The foam sponge cutting apparatus of claim 18, further comprising means (12, 13, 14) disposed on the body (10) and mechanically linked to the working surface (11) for moving the working surface (11) relative to the frame (20) for moving the foam sponge piece along a direction perpendicular to both the working section (X) of the horizontal blade strip (90) and the working section (Y) of the vertical blade strip (90').

20. (withdrawn from consideration) The foam sponge cutting apparatus of claim 18, further comprising means (50) for limiting the deflection angle of the first and second blade strips (90, 90') from deflecting out of a predetermined angular range.

21. (withdrawn from consideration) The foam sponge cutting apparatus of claim 18, wherein the working section (Y) of the vertical blade strip (90') can be moved to the first side (101) or the second side (102) when the horizontal blade strip (90) is used to cut the foam sponge piece in the horizontal cutting direction.

22. (withdrawn from consideration) The foam sponge cutting apparatus of claim 18, wherein the working section (X) of the horizontal blade strip (90) can be moved to the third side (103) or the fourth side (104) when the vertical blade strip (90') is used to cut the foam sponge piece in the vertical cutting direction.

23. (new) The foam sponge cutting apparatus of claim 18, wherein

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the transmission mechanism (23, 24) in the horizontal cutting device (16) is mechanically linked to the second blade turning unit (32b) for moving the second blade turning unit (32b) simultaneously with the first and second pulleys (43, 47); and

the transmission mechanism (23', 24') in the vertical cutting device (17) is mechanically linked to the second blade turning unit (32'b) for moving the second blade turning unit (32'b) simultaneously with the first and second pulleys (43', 47').

24. (new) The foam sponge cutting apparatus of claim 23, wherein the horizontal cutting device further comprises:

a first thread rod (31) disposed in relation to the first slide bar (22a) and mechanically engaged with the transmission mechanism (24) for moving the first pulley (43) along the first linear slide bar (22a);

a second thread rod (31) disposed in relation to the second slide bar (22b) and mechanically engaged with the transmission mechanism (24) for moving the second blade turning unit (32b) along the second slide bar (22b); and

a third thread rod (31) disposed in relation to the third slide bar (22c) and mechanically engaged with the transmission mechanism (24) for moving the second pulley (47) along the third linear slide bar (22c).